

**EPA Superfund
Record of Decision:**

**ELLSWORTH AIR FORCE BASE
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OU 09
ELLSWORTH AFB, SD
05/10/1996**

Final

Record of Decision for
Remedial Action at Operable Unit 9
Ellsworth Air Force Base, South Dakota

United States Air Force
Air Combat Command
Ellsworth Air Force Base

April 1996

Air Force Project No. FXBM 94-7002

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1.0 DECLARATION FOR THE RECORD OF DECISION (ROD)

1.1 SITE NAME AND LOCATION

Operable Unit 9 (OU-9), Old Auto Hobby Shop, Ellsworth Air Force Base (EAFB),
National Priorities List Site.

Meade and Pennington Counties, South Dakota

1.2 STATEMENT OF BASIS AND PURPOSE

This decision document describes EAFB'S selected remedial action for OU-9, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

This decision is based on the contents of the Administrative Record for OU-9, EAFB. The United States Environmental Protection Agency (EPA) and the South Dakota Department of Environment and Natural Resources (SDDENR) concur with the selected remedial action.

1.3 DESCRIPTION OF SELECTED REMEDY

The selected alternative for OU-9 is No Action. Media affected solely by petroleum hydrocarbon contamination will be addressed through State of South Dakota programs for Underground Storage Tank removal and/or petroleum contaminated soils. Ground-water cleanup and the fish-ingestion exposure pathway will be addressed as part of the Basewide ground-water operable unit, OU-11.

1.4 DECLARATION STATEMENT

Based on the findings of the risk assessment, unacceptable risk to human health and the environment does not exist and remediation is not warranted for OU-9. Presently, a corrective action plan (under the State petroleum release program) is underway to address fuel components in the ground water in the southern portion of OU-9. Remediation of other areas where soil and/or ground water is contaminated by petroleum will be performed in compliance with State of South Dakota regulations.

1.5 SIGNATURE AND AGENCY CONCURRENCE ON THE REMEDY

JACK W. MCGRAW
Acting Regional Administrator
U.S. Environmental Protection Agency Region 8

Date

NETTIE H. MYERS, Secretary
Department of Environment and Natural Resources
State of South Dakota

1.5 SIGNATURE AND AGENCY CONCURRENCE ON THE REMEDY

BRETT M. DULA
Lieutenant General, USAF
Vice Commander

Date

2.0 DECISION SUMMARY

2.1 SITE NAME AND LOCATION

Ellsworth Air Force Base (EAFB) is a US Air Force Air Combat Command (ACC) installation located 12 miles east of Rapid City, South Dakota, and adjacent to the small community of Box Elder (Figure 2-1).

EAFB covers approximately 4,858 acres within Meade and Pennington counties and includes runways and airfield operations, industrial areas, and housing and recreational facilities (Figure 2-2). Open land, containing a few private residences, lies adjacent to EAFB on the north, south, and west, while residential and commercial areas lie to the east of the Base.

2.2 SITE DESCRIPTION/HISTORY AND REGULATORY OVERSIGHT ACTIVITIES

2.2.1 Description/History

Ellsworth Air Force Base (EAFB) was officially activated in July 1942 as the Rapid City Army Air Base, a training facility for B-17 bomber crews. It became a permanent facility in 1948 with the 28th Strategic Reconnaissance Wing as its host unit. Historically, EAFB has been the headquarters of operations for a variety of aircraft, as well as the Titan I Intercontinental Ballistic Missile, and the Minuteman I and Minuteman II missile systems. The Air Force has used EAFB for support, training, maintenance, and/or testing facilities. Presently, the 28th Bombardment Wing (B-1B bombers) is the host unit of EAFB.

The OU-9 study area consists of the Old Auto Hobby Shop and the surrounding area. OU-9, approximately 90 acres in size, is located in the south-central section of the Base, southwest of Heritage Lake (Figure 2-2). A number of different contaminant sources are present within and upgradient of the OU-9 study area which have the potential to impact environmental media at the operable unit. OU-9 consists of roughly equal portions of industrialized and undeveloped areas. Gateway Lake is also included as part of OU-9 and is located in the extreme southeast corner of the OU. Ground-water cleanup and the fish-ingestion exposure pathway will be addressed as part of the Basewide ground-water operable unit, OU-11.

The types of potential contaminant source areas at OU-9 include: Building Operations, underground storage tanks (USTs), the former Quartermaster Gasoline Dispensing Area, the former fuel transfer line, industrial waste lines, jet engine test facilities, and upgradient source areas. There is no known documentation of major spills or releases at OU-9. Small volumes of fuels, oils, and solvents may have been released to the environment over time through incidental spills, leaks, and/or poor waste handling and disposal practices. Figure 2-3 indicates the locations of these potential contaminant source areas.

A shallow aquifer has been identified at depths of 10 feet to 50 feet beneath the ground surface. This ground water is classified as having a beneficial use as a drinking water supply suitable for human consumption (ARSD Chapter 74:03:15, Groundwater Quality Standards).

Deeper bedrock aquifers also exist beneath EAFB. These deeper aquifers are separated from the shallow aquifer by 800 feet of low-permeability clays and silts. In the past, EAFB utilized these deeper aquifers for its water supply. Presently, EAFB obtains its potable water from the Rapid City Municipal Distribution System.

2.2.2 Regulatory Oversight Activities

Environmental investigation activities at EAFB were initiated by the Air Force in 1985 through an Installation Restoration Program (IRP) Phase I installation Assessment/Records Search and Phase II, Confirmation/Quantification. The Phase I study, dated September 1985, identified a total of 17 locations at EAFB where releases involving hazardous substances potentially occurred.

In Phase II of the IRP investigation, field activities included soil vapor surveys, geophysical surveys, surface and subsurface soil sampling, ground-water sampling, ground-water hydrologic testing, and ecological investigations.

On August 30, 1990 (55 Federal Register 35509), EAFB was listed on the U.S. EPA's National Priorities List (NPL). A Federal Facilities Agreement (FFA) was signed in January 1992 by the Air force, EPA, and the State of South Dakota (State) and went into effect on April 1, 1992. The FFA establishes a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions for EAFB in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). It also states the oversight procedures for EPA and the State to ensure Air Force compliance with the specific requirements. The FFA identified 11 site-specific operable

units (OUs) and a Basewide ground-water OU. The Basewide ground-water OU is primarily used to address contaminated ground water that was not addressed during the investigation of a site-specific OU.

Listing on the NPL and execution of the FFA required the U.S. Air Force to perform a remedial investigation/feasibility study (RI/FS) to investigate the 12 OUs. In 1993 and 1994, an extensive RI field program was conducted to characterize conditions at OU-9. The program included drilling and sampling of boreholes, installation of ground-water monitoring wells, ground-water sampling, geotechnical analysis of soil samples, ecological evaluation, assessment of human health risks, and review and compilation of previous IRP investigations. Collection and laboratory analysis of soil, ground-water, surface-water, and sediment samples were included in the RI field program.

2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION

Community relations activities that have taken place at EAFB to date include:

- FFA process. After preparation of the FFA by the USAF, EPA, and SDDENR, the document was published for comment. The FFA became effective April 1, 1992.
- Administrative Record. An Administrative Record for information was established in Building 8203 at EAFB. The Administrative Record contains information used to support USAF decision-making. All the documents in the Administrative Record are available to the public.
- Information repositories. An Administrative Record outline is located at the Rapid City Library (public repository).
- Community Relations Plan (CRP). The CRP was prepared and has been accepted by EPA and the State of South Dakota and is currently being carried out. An update to this plan will be prepared in 1996.
- Restoration Advisory Board (RAB). The RAB has been formed to facilitate public input in the cleanup and meets quarterly. In addition to USAF, EPA, and South Dakota oversight personnel, the RAB includes community leaders and local representatives from the surrounding area.
- Mailing list. A mailing list of all interested parties in the community is maintained by EAFB and updated regularly.
- Fact Sheet. A fact sheet describing the status of the IRP at EAFB was distributed to the mailing list addressees in 1992.
- Open house. An informational meeting on the status of the IRP and other environmental efforts at EAFB was held on May 6, 1993. An open house was held on November 16, 1995 in conjunction with the Restoration Advisory Board meeting. Information on the status of the environmental efforts at EAFB was provided.
- Newspaper articles. Articles have been written for the Base newspaper regarding IRP activity.
- Proposed Plan. The proposed plan on this action was distributed to the mailing list addressees for their comments.

A public comment period was held from December 28, 1995 to January 27, 1996, and a public meeting was held on January 11, 1996. At this meeting, representatives from EAFB answered questions about the remedial action. A response to the comments received during this period is included in the Responsiveness Summary, which is part of this Record of Decision (ROD).

This ROD is based on the contents of the Administrative Record for OU-9, in accordance with CERCLA, as amended by SARA, and the NCP. The RI/FS reports and the Proposed Plan for OU-9 provide information about OU-9 and the selected remedy. These documents are available at the information Repositories at EAFB and the Rapid City Public Library.

2.4 SCOPE AND ROLE OF RESPONSE ACTION

The FFA identified 11 site-specific operable units (OUs) as well as a Basewide ground-water operable unit. The 12 operable units are identified as follows:

OU-1	Fire Protection Training Area
OU-2	Landfill Nos. 1 and 6
OU-3	Landfill No. 2
OU-4	Landfill No. 3
OU-5	Landfill No. 4
OU-6	Landfill No. 5
OU-7	Weapons Storage Area
OU-8	Explosive Ordnance Disposal Area (Pramitol Spill)
OU-9	Old Auto Hobby Shop Area
OU-10	North Hangar Complex
OU-11	Basewide Ground Water
OU-12	Hardfill No. 1

This ROD is to document the selected remedy for the preferred remedial action (RA) at OU-9. The ground-water and the fish-ingestion pathway at OU-9 will be addressed under OU-11, the Basewide ground-water OU. Ground-water contamination originates upgradient and extends beyond the boundaries of OU-9 and would be more efficiently addressed concurrently with other areas of the Base as part of OU-11.

The "No Action" alternative is being proposed for the remaining media of concern: surface water, soil and sediment. No action is warranted when a site poses no unacceptable current or future threat to people or the environment, when CERCLA does not provide cleanup authority, or when a previous cleanup activity eliminates the need for future cleanup. Unacceptable risk to human health or the environment from the contaminants related to OU-9 does not exist. Cleanup of petroleum-type chemicals will be addressed under State of South Dakota petroleum release regulations. Based on the above conclusions, no action is warranted for soil, surface water, and sediment cleanup at OU-9.

2.5 SITE CHARACTERISTICS

This section describes the presence and distribution of contaminants in environmental media retained as part of OU-9.

2.5.1 Soils

Organic Compounds

Organic compounds reported in soil samples from OU-9 include volatile organic compounds (VOCs), semivolatile organic compounds (SOVCs) and jet fuel. The predominant VOCs were BTEX (benzene, toluene, ethylbenzene, and xylene) components associated with fuels. The concentrations of VOCs were low, with the maximum concentration being 1.4 parts per million (ppm). The predominant SOVCs detected in OU-9 soil samples were polynuclear aromatic hydrocarbons (PAHs). Jet fuel was reported in soils throughout OU-9. The highest concentration of fuels were reported in samples collected near the former Jet Engine Test Facility, the Old Auto Hobby Shop, and from the northern boundary area of OU-9. Jet fuel was reported at a maximum concentration of 1,500 ppm.

Inorganic Contaminants

Several inorganics were reported in soil samples from OU-9. These reported inorganic compounds are considered to be naturally occurring.

2.5.2 Sediments

The primary chemicals detected in sediment at OU-9 were PAHs, detected at a maximum concentration of 3ppm. Several naturally occurring inorganic compounds were also detected in sediments.

2.5.3 Surface Water

Seven surface-water samples were taken from drainage areas and Gateway Lake. The primary chemicals detected were several inorganic compounds such as arsenic, lead, iron, and manganese. These compounds were above the Federal ambient water quality criteria and State Surface Water Quality Standards but considered to be naturally occurring at the detected concentrations. These compounds were evaluated in the risk assessment.

2.6 SITE RISK SUMMARY

Human Health Risks

The assessment of human health risks for this OU considered the following topics:

- (1) Chemicals of concern (COCs) in ground-water and soil samples taken at OU-9;
- (2) Current and future land-use conditions;
- (3) Potential environmental pathways by which populations might be exposed;
- (4) Estimated intake levels of the COCs;
- (5) Estimated intake levels of the COCs;
- (6) Toxicity of the COCs; and
- (7) Uncertainties in the assessments of exposure, toxicity, and general risks.

Noncarcinogenic and carcinogenic risks were calculated for the following six potential exposure groups:

- (1) Current Base personnel engaged in mowing open grassy areas who are exposed to surface soil;
- (2) Construction workers currently engaged in repairing damaged underground water mains who are exposed to total soils (surface and subsurface);
- (3) Recreational fishermen who currently fish at Gateway Lake and are consequently exposed to surface water, sediment, and the bioconcentrated chemicals in the fish they consume;
- (4) Future adults living onsite who play/walk on surface soil, fish at Gateway Lake, and ingest/shower with shallow ground water;
- (5) Future adolescents living onsite who are exposed to surface water and sediment through wading activities;
- (6) Future adult construction workers who excavate basements for onsite residences and are consequently exposed to total soils.

A quantitative risk assessment was performed to determine the carcinogenic and noncarcinogenic risks from exposure to contaminants in surface water, soil, sediment, and air. The risk assessment evaluated potential effects on human health posed by exposure to contaminants in these media at OU-9. Carcinogenic risks were evaluated by estimating the additional chance of developing cancer resulting from exposure to cancer-causing chemicals. According to EPA Risk Assessment Guidance for Superfund (EPA/540/1-89/002, December, 1989), the acceptable risk range, expressed as a probability, is approximately one additional chance in one million to one additional chance in ten thousand of developing cancer. This level of risk is also denoted by 1×10^{-6} to 1×10^{-4} . Risks within the acceptable risk range may or may not warrant remedial action depending upon site-specific circumstances. Risks below this range cannot be differentiated from the background occurrence of cancer in human populations. Noncarcinogenic health risks are evaluated using a hazard index. If the hazard index is less than or equal to one, the contaminant concentration is considered an acceptable level and generally assumes that the human population may be exposed to it during a 30-year period without adverse health effects. Risks calculated in a risk assessment are potential risks and are excess (i.e., over background) risks due to exposure from contaminants at the OU.

The risk assessment for OU-9 indicated that the risk for the future industrial land-use scenario, which is similar to the current land-use, is within the acceptable risk range. For noncarcinogenic risk, the HI was 0.4, which is acceptable. For carcinogenic risk, the calculated risk value was 5×10^{-8} , which indicates that there is no unacceptable risk due to carcinogenic compounds. Using reasonable maximum exposure (RME) values, the risk for the residential land-use scenario is within the acceptable risk range. The risk for this scenario using average exposure values is also well within the acceptable risk range. The future industrial land-use and residential land-use risks do not warrant remediation, particularly given the most likely future land use will be industrial, and the soils are remediated under State of South Dakota petroleum release regulations.

Potential risks posed by exposure to shallow ground water and ingestion of fish in Gateway Lake are being addressed as part of OU-11 and are not being addressed as part of OU-9. Because of these conclusions, remediation is not warranted for surface water, sediment, and soil at OU-9.

Ecological Risks

The ecological risk evaluation of OU-9 was based on a combination of data and literature reviews, field and laboratory analyses, analyte evaluation and screening, and preliminary risk screening. Results of the evaluation indicate that most of OU-9, other than Gateway Lake, does not present significant ecological value due to its highly disturbed environment (OU-9 consists primarily of buildings, roads, and paved areas). There is a small area of grassland and wetland habitat (including Gateway Lake) near the eastern boundary of OU-9. A variety of species was identified that could use OU-9 habitats, from snails and frogs inhabiting the wetland areas to birds and mammals. These species, along with terrestrial vegetation and soil faunal communities, do not reveal characteristics that indicate chemical-related impacts.

Because of the altered natural environment at OU-9, rare, threatened, or endangered species are unlikely to utilize the area for more than brief, periodic habitat. Due to the low levels of contaminant concentrations in the surface soils, the contaminants do not pose an unacceptable risk to these species. In addition, the limited contact these species would have with the OU-9 area indicates unacceptable risk to a single individual will not occur.

2.7 STATUTORY DETERMINATIONS

Based on the findings of the risk assessment, indicating unacceptable risk to human health and the environment does not exist, and remediation is not warranted for OU-9. Remediation of contaminated ground-water and the fish-ingestion exposure pathways will be addressed as part of OU-11. Remediation of soils and/or ground water contaminated by petroleum will be performed under the State of South Dakota regulations.

2.8 DOCUMENTATION OF SIGNIFICANT CHANGES

The selected action is the same as the preferred alternative presented in the Proposed Plan for OU-9 remedial action. There have been no significant changes relative to the Proposed Plan.

3.0 LIST OF ACRONYMS AND ABBREVIATIONS

CC:	Air Combat Command
BTEX:	Benzene, Toluene, Ethylbenzene, and Xylenes
CERCLA:	Comprehensive Environmental Response, Compensation and Liability Act
COCs:	Chemicals of Concern
CRP:	Community Relations Plan
EAFB:	Ellsworth Air Force Base
EPA:	Environmental Protection Agency
FFA:	Federal Facilities Agreement
FS:	Feasibility Study
IRP:	Installation Restoration Program
NCP:	National Oil and Hazardous Substances Contingency Plan
NPL:	National Priorities List
OU:	Operable Unit
PAHs:	Polynuclear Aromatic Hydrocarbons
ppm:	Parts Per Million
RA:	Remedial Action
RAB:	Restoration Advisory Board
RI:	Remedial Investigation
RI/FS:	Remedial Investigation/Feasibility Study
ROD:	Record of Decision
SARA:	Superfund Amendments and Reauthorization Act
SDDENR:	South Dakota Department of Environment and Natural Resources
SVOC:	Semivolatile Organic Compound
USAF:	United States Air Force
UST:	Underground Storage Tank
VOC:	Volatile Organic Compound

APPENDIX A

FIGURES

APPENDIX B

Responsiveness Summary Remedial Action at Operable Unit Nine Ellsworth Air Force Base, South Dakota

1. Overview

The United States Air Force (USAF) established a public comment period from December 28, 1995 to January 27, 1996 for interested parties to review and comment on remedial alternatives considered and described in the Proposed Plan for Operable Unit 9 (OU-9). The Proposed Plan was prepared by the USAF in cooperation with the U.S. Environmental Protection Agency (USEPA) and the South Dakota Department of Environment and Natural Resources (SDDENR).

The USAF also held a public meeting at 7:30 p.m. on January 11, 1996 in the 28th Bomb Wing Auditorium at Ellsworth Air Force Base (EAFB) to outline the proposed remedy to reduce risk and control potential hazards at the Operable Unit (OU).

The Responsiveness Summary provides a summary of comments and questions received from the community at the public meeting and during the public comment period as well as the USAF's responses to public comments.

The Responsiveness Summary is organized into the following sections:

- Background on Community Involvement.
- Summary of Comments and Questions Received During the Public Comment Period and USAF Responses.
- Remaining Concerns.

The selected alternative for OU-9 is No Action. Media affected solely by petroleum hydrocarbon contamination will be addressed through State of South Dakota programs for Underground Storage Tank removal and/or petroleum contaminated soils. Ground-water cleanup and the fish-ingestion exposure pathway will be addressed as part of the Basewide ground-water operable unit, OU-11

2. Background on Community Involvement

On August 30, 1990 EAFB was listed on the USEPA's National Priorities List (NPL). A Federal Facilities Agreement (FFA) was signed in January 1992 by the Air Force, EPA, and the State and went into effect on April 1, 1992. The FFA establishes a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions for EAFB.

Community relations activities that have taken place at EAFB to date include:

- FFA process. After preparation of the FFA by the USAF, EPA, and SDDENR, the document was published for comment. The FFA became effective April 1, 1992.
- Administrative Record. An Administrative Record for information was established in Building 8203 at EAFB. The Administrative Record contains information used to support USAF decision-making. All the documents in the Administrative Record are available to the public.
- Information repositories. An Administrative Record outline is located at the Rapid City Library (public repository).
- Community Relations Plan (CRP). The CRP was prepared and has been accepted by EPA and the State of South Dakota and is currently being carried out. An update to this plan will be prepared in 1996.
- Restoration Advisory Board (RAB). The RAB has been formed to facilitate public input in the cleanup and meets quarterly. In addition to USAF, EPA, and South Dakota oversight personnel, the RAB includes community leaders and local representatives from the surrounding area.
- Mailing list. A mailing list of all interested parties in the community is maintained by EAFB and updated regularly.

- Fact sheet. A fact sheet describing the status of the IRP at EAFB was distributed to the mailing list addressees in 1992.
- Open house. An-informational meeting on the status of the IRP and other environmental efforts a EAFB was held on May 6, 1993. An open house was held November 16, 1995 in conjunction with the Restoration Advisory Board meeting. Information on the status of environmental efforts at EAFB was provided.
- Newspaper articles. Articles have been written for the Base newspaper regarding IRP activity.
- Proposal Plan. The Proposed Plan for this remedial action was distributed to the mailing list addressees for their comments and additional copies of the Proposed Plan were available at the January 11, 1996 public meeting. A transcript of comments, questions and responses provided during the public meeting was prepared.

3. Summary of Comments and Questions Received During the Public Comment Period and USAF Responses

Part I-Summary and Response to Local Community Concerns

Review of the written transcript of the public meeting did not indicate community objections to the proposed remedial action. No written comments were received during the public comment period.

Part II-Comprehensive Response to Specific Technical, Legal and Miscellaneous Questions

There were no comments or questions regarding OU-9 presented during the public meeting.